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ABSTRACT

In part stimulated by the information needed by the Private Industry Councils (PICs) under the Comprehensive Employment and Training Amendments (1978), a growing number of groups and agencies have conducted surveys of local employers to gather various types of occupational data. Such activities may be useful and productive, if the data collection does not duplicate or interfere with existing occupational and related information development and implementation programs. Since several PICs have conducted or are considering a kind of survey that requires employers to forecast their employment needs by specific occupation, it is important that the problems associated with this kind of data collection be pointed out. During the 1950s and 1960s, such surveys were common; the two types in general use were the "Area Skill Survey," which required employers to provide relatively longrange forecasts of employment requirements by occupations and industries in an area, and the "Training Needs Survey," in which an effort was made to obtain current needs or short run forecasts for a few occupations. A study of the Area Skill Survey program was made through a review and summary of evaluations, papers, speeches, and opinions that were expressed concerning the Area Skill Surveys, their contents and methodologies, over a period of 20 years. The study concluded that the Area Skill Survey approach should be used with extreme caution--if not completely avoided. Arguments against using such methods include: (1) the findings and contents of such surveys may duplicate existing data such as those available from the Occupational Employment Statistics program; (2) the findings may be unreliable and unvalidated; and (3) the surveys are not cost effective. An alternative, better use of existing resources, such as the State Occupational Information Coordinating Committee agencies data, should be made. (KC)

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A REVIEW OF EMPLOYER FORCASTING METHODS AND DATA

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U.S. DEPARTMENT OF EDUCATION
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FOREWORD

During the past few years, a growing number of groups and agencies have conducted surveys of local employers to gather various types of occupational data. This activity has in part been stimulated by the formation of Private Industry Councils (PIC's), which were authorized under Title VII of the Comprehensive Employment and Training Act (CETA) Amendments of 1978.

As part of the Title VII mandate, PIC's "will undertake to make an analysis of private sector job opportunities, including estimates by occupation, industry, and location." To meet this mandate, the legislation encourages PIC's to use information from existing sources of data. However, PIC's are authorized to initiate local employer surveys to collect information that addresses their needs, if existing information systems are not adequate to meet their requirements.

Collection of information by PIC's and other organizations may be a necessity in some instances because of the lack of appropriate, timely data from other sources. In addition, the survey programs may provide other benefits, such as serving as a means of establishing stronger ties and closer relationships with the business community, and with the hope of attaining better understanding and greater receptivity in the use of employment and training programs and their participants as a source of potential new employees. In many cases, PIC's may be able to obtain the endorsement and support of the business community, chambers of commerce, and industry groups in the conduct and implementation of the local employer surveys and other programs.

Such activities may be useful and productive, if the data collection does not duplicate or interfere with existing occupational and related information development and implementation programs. It is important, however, that organizations that are considering initiating local employer surveys be aware of and understand the problems associated with the collection of data directly from employers.

Every effort should be made to use existing information already or capable of being available through the State Occupational Information Coordinating Committee (SOICC) member agencies (or other acceptable sources) and the occupational information system (OIS) in the State, and to assist or give support to the improvement and tailoring of available data to meet the various users' needs.

One kind of survey which has already been conducted or seriously considered by several PIC's and other groups requires employers to forecast their employment needs by specific occupation. Such surveys were common in the 1950's and 1960's. There were two types in general use: the first type was known as the "Area Skill Survey" and required employers to provide relatively long-range (two or more years) forecasts of employment requirements by occupations and industries on an area wide basis. The second type was referred to as "Training Needs Surveys" in which an effort was made to obtain current needs or short run forecasts (up to one year) for a selected and relatively few number of occupations.

An Area Skill Survey methodology was designed and provided to the State Employment Security Agencies by the Department of Labor in the mid-sixties. It became the accepted tool and process for developing and

presenting occupational forecasts. However, the Department of Labor rescinded the Area Skill Survey approach (in 1975) citing the high costs incurred and lack of reliability of the data obtained.

Because surveys using comparable or similiar procedures and methods are again surfacing, the National Occupational Information Coordinating Committee (NOICC) requested that a study be made of the history of the Area Skill Survey program, indicating its strengths and weaknesses. To this end, the following paper represents a review and summary of evaluations, papers, speeches, and opinions that were made or expressed concerning the Area Skill Surveys, their contents and methodologies used. The materials gathered covered a period of over twenty years; while some of the evaluations research papers were prepared as late as 1980, the surveys and methods they commented on were those prepared and used primarily in the sixties and early seventies. None of the "skill" or training needs surveys made during the past two years were involved.

The author's own experience in developing and implementing a number of such surveys was also applied in the analysis and critique of the program and its resultant data. Comments and recommendations represent the author's own conclusions and opinions along with those extracted from the reports prepared by other evaluators and commentators. They should not be construed as representing the thoughts or reactions of the NOICC member agencies.

This paper is intended to be used only as an information tool; it brings together the thinking and research of a number of surveys prepared in

earlier years, and assesses them for value and effectiveness. The objective is to help people not familiar with the background of the employer forcasting efforts to consider and determine their own plan of action carefully before initiating and implementing any employer survey program.

The author's general conclusions are that the use of the area skill survey approach should be done with extreme caution if not completely avoided. Arguments against using similar methods include: the findings and contents of such surveys may duplicate existing data such as those available from the Occupational Employment Statistics program; the findings may be unreliable and are rarely subjected to any validation tests; the surveys are expensive to conduct and complete, and are not likely to be cost-effective. The author believes that the potential surveyor should be aware of the caveats and constraints surrounding and inherent in the employer generated forcasts, and the warnings and lack of data credibility delineated by a number of other analysts.

It is clear that greater emphasis must be placed on the more efficient and effective use of available resources, and on the enhancement of the quality and presentation of occupational information for the benefit of administrators, planners, counsellors, and the labor market participant. This places responsibility on the data producer, e.g. the State Occupational Information Coordinating Committee member agencies, to improve the data content and format, and to assist in acquainting and training users in the application of the data. The users themselves must become more knowledgable and sophisticated in the best utilization of the data

and skilled in their application. The users should also recognize their responsibilities in aiding and abetting the development, upgrading, and continuation of occupational information programs.

Odessa Dubinsky

INTRODUCTION AND BACKGROUND

The need for knowledge about the kinds and numbers of workers already employed and wanted either immediately or in the future to keep production of goods and services going dates back to the beginning of the agri-industrial period. It has been mainly, however, in this century that concerted effort has been made to apply some type of systematic and consistent methodology to obtain acceptable and useable data as a base for that knowledge.

In the forties, the U.S. Department of Labor, in tandem with the military services, set up procedures designed to obtain staffing patterns of employment from employers engaged in production of war materiels or other essential services. These were intended to permit decisions as to which occupations were most open to worker replacement and to job restructuring, so that less trained and less experienced persons could be used. The manning tables, as they were called, were also used to determine the number and kinds of job vacancies for which worker shortages were already causing or threatening impediment or obstruction of production. An attempt was also made within this procedure to project worker needs on at least a short-term basis in order to redirect available labor supply to "most favored" job slots.

The exigencies of war were joined in the early fifties by the realization that better and more intensive and extensive training and preparation of workers was necessary for the benefit of both the workers and their employers, and in hopes of facilitating the functioning of the local labor markets.

The ebullience of the post-war years was rapidly fading; veterans had finished school but found few job openings; and the transfer of people from the south and Appalachia to the north central and west coast areas had resulted in growing pools of largely unskilled workers.

There are instances on file of attempts made as early as 1937 to compile and

publish occupational projections (1). In 1941, an article on occupational outlook research was published in the Public Personnel Review, which was followed in 1946 by a paper prepared by A.F. Henrichs entitled, "Progress in Occupational Outlook Research." Reference was also found to an actual survey made in York, Pennsylvania during the Korean conflict; copies of the report were not available.

The United States Bureau of Labor Statistics began what was to be a continued program of intensive research and experimentation into the subject area in the mid-fifties. It was particularly interested in the determination, measurement, and directions of the trends and changes which could be expected over time in the occupational structure of the nation's economy.

In several states, among them Arizona, Alabama, Utah, Wisconsin, and North Carolina, attempts were made toward the end of the fifties to devise and implement methods for obtaining occupational staffing patterns directly from employers. A major part of the process was the integration of "forecasts" by employers of employment needs and/or levels for some future date.

These efforts were primarily exercises in the overall development of what eventually came to be called officially the Area Skill Surveys and the procedures for their construction.

From 1960 on, and accellerating up through 1965, surveys of occupational demand, and sometimes supply, were compiled and published in more than half the states. Procedures in all cases involved obtaining information directly from employers, and their credibility and acceptance was dependent on the validity and accuracy of the employers' responses as well as on the atmosphere of coordination and cooperation with the employing community and with potential users.

In 1962, the passage and implementation of the Manpower Development and Training Act (MDTA) brought impetus to the still infant program. In order to obtain funds from the federal government to implement the Act and to set up the training programs

and obtain the facilities and materials needed, it was required that current and expected job vacancies be assessed. The language of the legislation was quite clear and called for a determination of available jobs, assessment of available supply of workers and their eligibility for MDTA training and allowances.

Additional pressure to provide information on occupational structure and trends came from the passage of the Vocational Education Act and its eventual amendments in 1968. The requirements of the Amendments were particularly directed toward "occupational information regarding reasonable prospects of employment in the community and elsewhere, and toward consideration of such information . . . in providing vocational guidance and counseling to students and prospective students and in determining the occupations for which persons are to be trained" (2).

Since the creation of the Manpower Development and Training Act and its various progeny which eventually culminated in the current Comprehensive Employment and Training Act (CETA), the related legislation has always contained comparable requirements for labor demand and supply information. However, not until the Private Sector Initiative Program for the Economically Disadvantaged, established under Title VII of the CETA Amendments of 1978, was the requirement spelled out so definitively. Specific citations in the legislation and regulations regarding the role of private industry councils (PIC) in this area include:

Legislative references; CETA Amendments of 1978 (P.L. 95-524).

- Section 703(b)(3): "The private industry council will undertake to make an analysis of private sector job opportunities, including estimates by occupation, industry and location;"
- Section 705(a)(10): "encouraging employers to develop job skill requirements and to coordinate such forecasts with prime sponsors;"

Regulations; Federal Register, Tuesday, May 20, 1980.

- Paragraph 679.3-7, Functions of the PIC, Section (b)(2): "in designing the

plan and on a continuing basis, the PIC shall analyze private sector job opportunities, including estimates by occupation, industry, and location. The analysis should survey employment demands in the private sector and training possibilities, such as apprenticeship, in order to develop projections of short and long range labor needs.

While the regulations do say that the PIC should utilize available labor market information from sources already in place, such as the State Employment Security Agency (SESA), a number of PICs have considered the language of the legislation as a green light to initiate employer surveys including area skill survey type efforts.

Area Skill Surveys and Training Needs Surveys: The Concept:

The flurry of Area Skill Surveys was at its height in the first half of the sixties. The data usually covered a three to five year forecast period. These were rarely considered satisfactory for MDT training need decisions, since most of the training given was for relatively short periods, and the major interest was in getting information on immediate or near future job vacancies. The data also were not considered specific enough, nor were the geographic areas covered satisfactory. Because of these deficiencies, another type of survey, the "Training Needs Survey," evolved. The full-scale Area Skill Surveys were most often conducted by the staff of the State Employment Security Agency, usually in the research and analysis division. In a few instances, contracts were given to universities or colleges or private research firms. Almost all were funded by grants from the United States Employment Service of the U.S. Department of Labor. The Training Needs Surveys, on the other hand, were conducted by a variety of agencies and persons, including the local field office staff of the Employment Service, Vocational Education faculty and/or staff, or people working for interested community agencies. During this period, there were no set procedures or standards for sample selection, data collection, compilation, analysis, or presentation.

In March, 1965, instructions for the preparation and processing of data for use in Training Needs Surveys were developed and issued by the U.S.E.S. to the State Employ-

ment Service Agencies. During the following November, a detailed manual of instructions for producing Area Skill Surveys was finally made available to the States by U.S.E.S. This manual was based in part on the experiments and experience in the field. The difference in the instructions and contents of resultant reports was necessary because of the differences in definitions and absolute variances in scope, content, and statistical approach between the two types of reports. The basic differences between the two are shown in the following table.

Area Skill Surveys	Training Needs Surveys
(1) Employer forecasts of 2-5 years.	(1) Employer forecasts of less than 2 years.
(2) Scientific sample design intended to be inflated to provide forecasts for an entire area across all industries.	(2) Not a scientific sample design and not intended to be inflated to the universe.
(3) Covers a large number of occupations.	(3) Covers relatively few selected occupations - those thought to be in demand.
(4) Forecasts are intended to be published.	(4) Numerical results are not intended for publication.

The two types of surveys will be discussed in more detail in the next few pages.

"Area Skill Surveys are vehicles designed to provide comprehensive information on the current and future industrial-occupational employment structure of defined geographic areas based on sample surveys of local employers" (3).

That definition was devised by field practitioners, since even the Handbook on Employment Security Job Market Research Methods did not offer a specific definition. In November 1965 the Handbook presented a new section which was called "Area Skill Survey." This section was designed to provide a methodology for initiating, carrying out, and presenting the survey and its findings. In the Handbook, the Area Skill Survey is

designated as a "technique" to be implemented as part of the occupational job market research program.

The purposes and objective in the main were the same as expected and wanted from any of the other techniques and methods used to project employment trends to provide information about job opportunities for use in employment counseling, job development and training planning. However, an additional dimension was included: the stimulation of local employers to evaluate their manpower needs and promote necessary in-plant training. This last objective was and is probably the one best purpose of the Area Skill Survey method and is the major distinction between it and the more sophisticated statistically derived and computer processed occupational projections.

Instructions called for the "collection of basic data, mostly from employers" on a number of items, including but not exclusive of current employment and employment requirements by occupation for some future date. Also to be collected were data on existing in-plant training programs and their enrollments, turnover data, numbers and kinds of hard-to-fill jobs and "new and emerging" occupations. Other information to be gathered was "interest in, and need for, pre-employment or supplementary vocational training," and "where feasible" the effects of technological change.

The Area Skill Survey instructions, as noted previously, were actually made available to the field for implementation some eight months after the publication of the chapter called "Training Needs Survey." This title also referred to a technique and no specific definition was given. The procedure was set up to identify quickly "occupations in short supply for which training courses can be initiated." The methodology was set up in response to the legislative requirements of the Area Redevelopment Act, the Manpower Development and Training Act, the Vocational Education Act, and the Economic Opportunities Act.

The Area Skill Survey, as differentiated from the Training Needs Survey, covered the entire span of industries and occupations in the geographic area under study, rather

than a few or a single selected occupation(s). It was also recommended when long-range (2-5 years) occupational data were desired. It was suggested that emphasis be given to occupations requiring considerable training time - "perhaps a year or more" but less than a four-year college education. The depth and scope of "community interest" was considered a strong determinant in the decision to embark on a full-blown area skill survey. (It might be noted here that the terminology itself has undergone some mutation since the sixties. When speaking of "skill surveys" it is often found that present day audiences are apt to think of "skills" as job task capabilities, rather than a study of the occupational structure of an area).

The methodology and procedures for implementing a skill survey at either the State or sub-state (usually the SMSA) level covered the preliminary work to be done, the scope of the survey, prototypes of publicity releases, pre-survey letters, worksheets, the survey schedule forms, non-response follow-up procedures, and sample selection. Steps for tabulating responses were shown along with a procedure for "weighting up" results. The latter included a method for developing inflation factors for each industry category.

The Skill Survey Handbook also made an attempt to provide a methodology for "estimating trained labor supply available at later periods." A schedule was also included for obtaining this kind of information from "schools, trade unions and apprenticeship organizations." Definitions of occupations were included in an effort to ensure that supply data would relate to the same occupations as the demand data from employers.

Collection of employment information was to be done by mail or personal visit, with a size of firm standard set for determining which firms were to be personally visited.

A standard was also set for the percent of total employment to be obtained in each specified industry division through the survey responses. All firms, regardless of industrial activity with 100 or more employees, were to be surveyed and the smaller establishments were arranged by size within industry and a representative sample was to be drawn.

The body of the final skill survey report was expected to include some reference to the economic characteristics of the area covered, including past employment trends. The "findings" were to present a careful analysis of the data, with necessary tabulations and explanatory narrative. To be shown were the two and five year staffing needs, training output, and an assessment of the demand/supply balance.

The Handbook recommended that the surveys should be updated within two to three years of the initial survey. And the State was to appraise the survey findings and their application in the community, including an analysis of the accuracy of the forecasts. With a few exceptions, no evidence has been found indicating that many States either updated or validated the area skill surveys once they were completed and published.

In the words of the Handbook instructions for Training Needs Surveys, "as scientific sampling procedures are not followed in the conduct of these studies, the data developed are not inflatable to the universe and are, therefore, not representative of the entire training needs of the occupations in the community. Because of these limitations, these data and particularly numerical estimates of shortages in specific occupations - <u>are not suitable for publication</u>."

The methodology for the training needs reports did not require employer interviews - such information sources were given secondary importance. The existence of a labor shortage or excessive demand in a particular occupation was usually to be determined by other means and validated, if necessary, by "contacting (through personal visit or telephone) <u>a few firms</u> known to employ workers in the occupations." This method was considered as especially adaptable to the collection of information on a limited number of occupations or a single occupation. More extensive surveys were suggested for larger numbers of occupations or where several industries were involved. These were for preselected occupations and were conducted by means of a simplistic, although not necessarily simple, survey with personal visits made to the largest employers. An effort was to be made to provide estimates of supply available and expected for the occupation.

The handbook for the training needs survey also set forth procedures for identifying and selecting occupations for review, making the necessary surveys, and tabulating the results.

Again, references in the handbook are made to now obsolete data, and to report forms and materials no longer in use. Therefore, only the most salient sections are noted here.

The primary source of data for the training needs survey was to be lists of local office job openings and other transaction data. There is little or no warning of the limitations of such data, except to suggest that the review be made by "experienced placement officials with good knowledge of the local area economy." Persistence of demand was to be treated as of major significance, and size of demand (i.e. number of job openings received by a local office over a 6 month period) was also considered important.

The absence of applications on file was to be viewed as maybe significant; at that time, however, the wholesale taking of registrations for work and maintaining them in an "active" file was much more prevalent than it is now. The checklist form offered indicated that a completely manual operation was visualized.

In both the training needs survey methodology and that for the area skills survey, emphasis was put on the dissemination of the report findings (if not the actual data in the case of the training needs reports) and on setting up of community councils, and making contacts with "cooperating employers, associations, businessmen's clubs, and other civic groups."

According to the Handbook instructions on Training Needs Surveys, "the method is designed to pinpoint particular labor shortages and to evaluate the degree of the shortages in the most expeditious manner." It was designed for use: 1) in a relatively small area (less than an SMSA); 2) to cover a limited number of occupations regardless of size of area; 3) or for occupations concentrated in a few larger establishments.

The local Employment Service job openings data were used to indicate the

existence of demand and a few firms known to employ workers in the selected occupations were called to validate the worker need. "If the demand in these few firms (as indicated by the employer contact) clearly reveals an existing shortage, this should be sufficient . . . to establish a training need."

The employer schedule used in the Training Needs Survey suggested included questions on current and "forecasted" employment (usually for 6 and/or 12 months) in the pre-selected occupations; replacement needs for the forecast period; current job vacancies; number of workers completing in-plant training, etc. Also, to be asked was information on employment effects of plant expansion, modernization, and/or technological changes; shifts in industrial activity expected; and kinds of training the employer felt were most needed.

A section was devoted to the estimating of available qualified worker supply. Here, the source was to be the local office file of persons registered for work, with checks made against the tabulations of unemployment insurance claims data. An effort was also to be made to determine the number of persons in training for the occupation who would be available to take jobs during the forecast period.

Since the occupational demand data per instructions in the Training Needs Survey Manual were not to be inflated, it was obvious that a net shortage or surplus for each occupation could not be estimated either definitely or otherwise. Only when sampled demand exceeded total supply could it be assumed that a training need probably existed.

However, the need for instant action was considered greater than the need for validation or accuracy; the instructions said: "To expedite needed training programs, action should be taken to verify training needs and otherwise commence training programs initiation."

The appendix includes a list of Area Skill Surveys which were conducted by the indicated States and the date(s) of their publication. It should be noted that several states did repeat the surveys. None of the Training Needs Surveys, as identified by MDTA

Handbook, Chapter II, were found listed in the library or literature searches; most were probably conducted in accordance with instructions and not published for general use. Other skill surveys were known to be prepared, but evidently copies were not available to the archives. Requests to the State Employment Security Agencies for copies of their reports to use in the preparation of this paper were mostly non-productive.

The major progress in demand-supply analysis and its forecast-projections cohort came in the late sixties, when the program was turned over to the Bureau of Labor Statistics for methodology development. This brought a move from the employer based forecasts to a computer processed industry-occupation matrix which was based on census data. This methodology is described in the BLS' series of publications entitled, "Tomorrows' Manpower Needs."

While the Bureau had been acting in an advisory capacity in this matter to the Employment Security Agencies, in November 1972, it received the official mandate and responsibility for providing consultation and technical services to the States concerning occupational projections. It was not, however, until July, 1975, in Reports and Analysis Letter (RAL) 11-75 issued by ETA, that the State Employment Security Agencies were told to cease and desist from the Area Skill Survey methodology and to use the industry-occupation matrix technique.

At this time, reference was made to "recent studies" which "suggested that occupational projections based on employer forecast data may not only be less reliable but are inordinately time consuming and expensive to prepare" (4).

The take-over of the program by the BLS led directly to the present Occupational Employment Statistics (OES) program which continues to involve the two original federal agencies--BLS and the Employment and Training Administration (ETA). The principal funding source of the OES program is ETA; BLS is responsible for the technological and methodological aspects and the State Employment Services Agency (SESA) offices operate the program, analyze the data, and publish the information.

The OES program now includes, in addition to the census-based industry occupation matrix methodology and output, an employer based program. This last consists of a survey of non-farm wage and salary establishments conducted over a three-year cycle. These survey data are used to estimate non-agricultural wage and salary employment by industry and occupation for States and selected sub areas. The major difference, other than a higher degree of sophistication between this method and the earlier skill survey is that forecasts of employment are not requested from employers and the list of occupations used in the survey form has been selected from various sources and reflect experience as to how employers maintain employer records. Projections of levels to some future date continue to be developed similarly to the techniques used for the census-based matrix-by projection of industry cohort data using a variety of accepted statistical processes.

A REVIEW OF AREA SKILL SURVEYS: FINDINGS FROM PREVIOUS STUDIES/REPORTS

A very thorough literature search brought to view a minimum of published papers which could be used to determine the extent of validity and applicability of Area Skill Survey findings.

One of the earliest studies found was done by Wellemeyer and Associates in 1965 at the request of the Bureau of Employment Security (now Employment and Training Administration). The study was to be a "systematic appraisal of these (Area Skill Surveys) surveys" (5). The evaluation was to cover results of the operation in Battle Creek, Michigan and Trenton, New Jersey. The procedure called for comparing actual 1963 and 1965 employment with that projected for those dates in the survey made in 1960. Employers were also interviewed regarding their methods of and problems with forecasting. The findings in both areas, while apparently indicating a high degree of accuracy in the original report and general good feeling toward the project by the employer community, are based on a relatively small sample of firms and under very stable

economic conditions. The shorter term projections in Trenton were found to be most accurate. In the Battle Creek area, the error, while considerable in some occupations, was written off as not too significant in terms of evidence of the data.

It should be noted that careful review of the published tables purporting to authenticate the accuracy of the forecasts results in a somewhat different diagnosis. The forecasts of total employment in the selected occupations over the five year period came within three-tenths of one percent of the actual; the projection for total employment was too low by nearly 4 percent. Within the major occupational groupings, however, the errors in projecting ranged from a negative 13 percent in clerical occupations to an underestimate of 8 percent in the professional group. Several individual occupations showed errors of estimate of more than 25 percent, which probably would adversely affect their use in planning of training.

In the Trenton area, where the forecast was made for only a two year period, the total employment projection was within 0.3 percent of the actual, but internal errors ranged from 16 percent too high in the case of unskilled occupations, to 14 percent too low in the clerical category. Individual occupation forecasts showed no better comparison with the actual figures than in Battle Creek. Again, the "overs" and "unders" had effectively been cancelled out in summation.

It was admitted that few employers in either area did any long-range planning and those which did were not apt to translate such planning into worker needs or staffing patterns. Therefore, it seems, at a distance of 15 years, that the apparent verification of the forecasts was more coincidental than scientific.

In 1966 a study was made by Rutgers State University to test the results of the Occupational Training Needs Survey conducted in the Newark Labor Market Area in 1963 (6). The original survey covered only 23% of the area's wage and salary employment, exclusive of government, railroads, mining, forestry, and fisheries. The validation study accounted for over three-fourths of that coverage. In some industries, coverage was quite

small in both the original and follow-up surveys. While internal errors were so counter-balanced as to provide a projected total employment figure within one-tenth of one percent of the actual level achieved, in over half the occupational categories the trend forecast was directly opposite that which actually occurred. In some very important and highly trainable occupations, draftsmen, and automobile mechanics, the forecasts were positive, but by the projection date, employment in these jobs had decreased. On the other hand, equally trainable occupations such as keypunch operators and programmers were badly underestimated. The summation of this study included a statement "this did not provide as solid a basis for occupational manpower needs as one might wish. On the other hand, it may be that this imperfect estimate is better than none."

In 1970 a very comprehensive and critical review of five alternative methods of forecasting labor supply and demand in an urban labor market area was prepared and published in Wisconsin. Called "Project Vision," it was one of several studies financed by the U.S. Department of Labor to perform experimental research in the field of occupational demand and supply forecasting.

The field work for this comparatively exhaustive project was done in the Milwaukee, Wisconsin area (SMSA) during 1967 and 1968. The project objectives were to examine five different methods or approaches to develop employer needs projections. Included among the five were the "Experimental Employer Needs Survey" which was a variant of the Area Skill Survey technique, the method most widely in use at the time the project was begun.

The conclusions reached by the project staff were first that no one of the five techniques tested in Milwaukee could fully satisfy all the conditions set forth in the Vocational Education Act of 1968. It was found that a modified version of the Skills Survey Technique could provide current employment statistics. (This finding was in opposition to that of the "Manpower Forecasting" study made at Rutgers in 1966, which states that initial accuracy of the occupational data provided was questionable because

"some of the figures supplied were calculated without precision."). Secondly, it was stated that the Area Skill Survey technique was "less reliable in projecting employers' future occupational requirements in periods of three or five years . . ." it was found to be almost impossible for employers to provide the requested estimates with any degree of reliability."

In the earlier studies evaluating the efficacy of the area skill surveys, one very important item essential to the achievement of the goal and objectives of the occupational projection program was conspicuously absent. No mention of the supply component was made in the Wellemeyer, Rutgers or Moser studies. However, Project Vision spent considerable effort and space on the subject. Their finding was that "the current practices of record-keeping among the supply sources were not capable of yielding overall data that could be put to practical use for vocational education curriculum planning." And to go further, . . ." no one seemingly collected data on combined output and no source was found that would yield the extent of training in any given curriculum area (7).

What Project Vision did attempt was to describe the supply components, and discuss the possibilities and limitations in taking their measure. The study also undertook to analyze the labor demand-supply data in an effort to reveal areas of current or potential occupational shortages. Suggestions and recommendations were also included as to means and sources of data and the urgent need for supply data.

The most important and most effective result of "Project Vision" seems to have been the development of an occupational clustering system which was cross-walked to the Office of Education instructional programs. This was produced and published in the "Occupational Cluster Reference Guide" (8). The basic principle behind the Guide was to group occupations for which preparation for entry to the job could be obtained through given instructional programs.

For her doctoral thesis, Collette H. Moser undertook an "Evaluation of Area Skill Surveys as a Basis for Manpower Policies" (9). Published in 1971 under the sponsorship of

the Manpower Administration (now the Employment and Training Administration) of the U.S. Department of Labor, the study was directed toward an examination of methodologies, data collection, problems involved. and the need for such data as well as their accuracy. Doctor Moser's work was done in Roanoke and Petersburg, Virginia, where Area Skill Surveys had been conducted by the State Employment Security Agency in 1964. Statistical data were obtained by resurveying employers who had been in the original study. The statistical technique used to evaluate the projections was an "inequality coefficient" as set forth by Henri Theil in his book, "Applied Economic Forecasting." This was probably the most sophisticated evaluation effort either found in the literature search or done by any of the producers or assessors of the projections. By using the inequality coefficient it is possible to measure the seriousness of the prediction error. The analysis done by Dr. Moser calculated the inequality coefficients (U value) for the total of all occupations and for each specified occupation. It was noted that internal errors could cancel each other out--as was seen in the Wellemeyer study.

Also examined was a "Naive projection model" as well as a no-change extrapolation. The naive model simply applied the two-year actual growth rate to total employment in each occupation in the survey, and then to occupational employment of each firm employing persons for the particular occupation under discussion.

Doctor Moser concluded that Area Skill Survey predictions were better than no-change forecasts; the naive model gave somewhat better figures in larger and growing occupations; and the "kind of information found in Area Skill Surveys would seem to fill occupational data requirements." It was emphasized that if the Area Skill Surveys method was used, the accuracy of the data needed to be carefully evaluated (10).

As part of one of the third-party evaluations of the "Occupational Training Information System" (OTIS), Macro Systems Inc. of Maryland included a rather definitive examination of the reliability of employer based forecasts (11). OTIS itself was developed in Oklahoma during 1968 "to provide continuous, timely information for statewide

vocational education planning and economic development." An even more comprehensive version of the system was later undertaken in Kentucky using State and Federal funds.

The stated objectives of the OTIS system included: "the first objective of the OTIS effort is to establish at the State and local levels of government mechanisms for the effective, efficient, and coordinated use of total training resources in accordance with identified opportunities and needs" (12).

A second objective was to give these mechanisms data, of which "specific and identifiable net manpower requirements" were an important cohort.

Macro Systems conducted a survey of the employers participating in the Oklahoma program. Analysis of the response data indicated that: 1) Over 60 per cent of the employer forecasts did not increase the accuracy which would have been obtained with a simple no-change extrapolation. 2) When compared to actual employment, nearly 30 per cent of the firms made forecast errors of over 20 per cent; the average error was over 26 per cent. 3) Over half of the employers had a forecast error equal to or greater than the actual change in employment. The average error was nearly 25 per cent greater than the actual employment change.

Additional analysis indicated that the type of forecast and employment size did not affect accuracy substantially.

On the supply side, it was noted that while persons receiving formal vocational training appeared to be adequately covered, individuals leaving non-vocational schools or changing occupations were not included and that these would represent a considerable number. Also omitted, apparently, were many of the Oklahoma State Employment Service registrants.

Caution was advised on the use of the interface statistics--the comparison of estimated supply by occupation with demand in the occupation. It was reiterated that "some of the forecasts of manpower demand are inaccurate and additional sources of supply are required." Other constraints noted were the geographic area(s) covered, and

lack of information on commuting and on personnel shifts.

Another evaluation (13) of OTIS stated among some other very positive reactions, that "OTIS involves interested groups and citizens from both industry and education in the forecasting and operation of the system itself." The study then concludes "that if this systematic interaction creates better understanding between industrialists and training personnel, then the OTIS effort will exert a strong positive impact regardless of the accuracy of its forecasts."

Since the instructions for preparing Area Skill Surveys were rescinded in 1975, and the States were told to discontinue the practice, little was to be found on the subject in the literature search up until 1980. In the past decade, almost all of the States had converted to the OES program and were compiling and publishing data using either or both the census-based matrix process or the employer survey method. The Area Skill Survey program was not only dormant, but dead. The resurrection came with the aforementioned CETA amendments establishing the PIC's. It seemed again necessary to review and evaluate the Area Skill Survey procedures and credibility, and to provide guidance to PIC and other programs that were implementing employer surveys.

In response to this need, the Labor Market Information Division of ETA in conjunction with North Texas State University, Northeastern University (Boston) and NOICC, prepared the monograph, "Using Labor Market Information to Identify Private Sector Job Opportunities.". The monograph emphasized the necessity to consider all aspects of the problem carefully before "running out and collecting data." It suggests a method quite simplistic, but probably as productive as a far more sophisticated approach, to supplement existing data rather than construct a totally new project. Program operators are told to avoid any survey which requires employers to forecast demand. It is recommended that if any surveys of the employer community are made, the data requested should be confined to: 1) the number and occupational characteristics of existing job vacancies; 2) hiring practices and policies (internal labor markets); 3) wage

information; 4) training and promotional policies; 5) views on CETA programs; etc. A number of references are made to the weaknesses of the Skill Survey found by other analysts and researchers. These issues are also covered in the Labor Market Information Training Institute training for PIC staff.

Another set of occupation-projection making alternatives, with explanatory discussion of the reasons for their need can be found in the paper prepared by Dr. Harvey A. Goldstein in July, 1980, (14). This monograph, entitled "Occupational Employment Projections for Labor Market Areas," examines past and existing and suggested methods for making medium to long-term projections of occupational employment from the "crystal-ball" approach, through a simple trend analysis, to multi-equation economic models. The discussion covers the Area Skill Survey technique which the author states brought results which "were unreliable and often produced projections with large errors." However, the author does describe some advantages of the employer survey approach: 1) the employer survey generates primary data; 2) it can lead directly to estimates of target-year employment; 3) it is not constrained by a formal structure or the need for operational variables; 4) it is likely to be the most comprehensible model. The major disadvantage, of course, is the universal agreement on the low accuracy of the data obtained. However, Dr. Goldstein did not provide empirical evidence of the lack of accuracy; his conclusions were evidently based on findings by other researchers or his own opinions.

PROBLEMS/LIMITATIONS OF AREA SKILL SURVEYS

1. The Quality of Employer Response

The extant studies directed at validating the statistical accuracy of the Area Skill Surveys often referred to other problems. In 1969 the Commissioner of the Bureau of Labor Statistics, Geoffrey H. Moore, made what was probably the most succinct

indictment of the entire program when he wrote: "The development of the science of forecasting depends crucially upon the accumulation and continuing analysis of a record of forecasts. Without a record, one cannot evaluate the performance or tell how to improve it. All too often forecasts are thrown out and forgotten--or thrown out with the hope they will be forgotten--as soon as the occasion for them is past. They are often inadequately annotated when they are made. They often fail to specify what assumptions or conditions are laid down, what probability or range of outcomes is attacked under these conditions, and what method or information was used to arrive at the results. Sometimes the forecasts are couched in terms that make them unverifiable" (15). A memo from Dudley Young, Assistant Commissioner of B.L.S., dated November 1, 1972, to the Commissioner and referring to the employer forecasting methodology used in Oklahoma for OTIS, stated: "It is our opinion that such employer forecasting methods have long ago been discredited and abandoned for a variety of reasons: principle among which is the inaccuracy of the demand forecasts. The Bureau's position is by no means unique. Several evaluations of employer forecasting procedures raised grave questions concerning the ability of employers to forecast their occupational manpower needs."

One of these evaluations was conducted in Minnesota in 1970 (16). The author, H.G. Heneman, referred to the wartime experience with manning tables and personnel inventories, and noted they were generally dropped after the war "because they seemed unnecessary in what was assumed to be a labor surplus economy." He goes on to discuss the forces during the 1960's which were driving employers, especially those with government contracts, "to study and justify alleged manpower requirements." The federal government was (and still is) seeking "meaningful" job vacancy (and labor demand) information for training and retraining. Cooperation between government and business on employment, housing, and urban renewal for the disadvantaged supported the spread of planning concepts. Increased sophistication on the part of a new breed of managers brought interest and willingness to engage in complex and tough problem solving. And, of

course, there was the concept that in a free enterprise economy, effective manpower decisions could best be made by individuals and employing organizations.

Mr. Heneman's research, presented in Employer Manpower Planning and Forecasting, divulged the fact that up until the end of the 60's firms were not using, or even able to use, sophisticated methods. Rather, they tended to depend on intuition, and in fact few companies were actively planning for manpower. Simple extrapolation of internal demands was the most common method of planning. In the relatively few instances where planning was done, it was primarily very selective--e.g. for professional and managerial recruiting only.

Mr. Heneman's own survey consisted of a sample of Minnesota employing establishments having 500 or more workers. Only about one-third of the respondents (69 firms responded out of the original 105 in the sample) forecast requirements for all employees. Most of the firms which did any forecasting of employment needs used sales as their only factor in making their estimates. Manpower forecasting seemed to be almost completely isolated from other types of planning.

According to Mr. Heneman's study, when forecasts went wrong most firms admitted knee-jerk responses. Underestimates brought accellerated hiring; overestimates brought layoffs or a slow down or stop in hiring.

Thirty-four of the firms in this survey had also participated in the Area Skills Survey by the Minnesota Department of Employment Security in 1963. Comparison of their two-year estimates from that Survey against actual employment for 1965 showed a median error of estimation of total employment of about 6 percent. As previously noted, total employment levels often mask massive internal errors. It appeared that formal manpower forecasting was superior to "naive" estimates only when substantial employment changes occur.

An earlier survey made of 159 Milwaukee firms in 1966 showed that "the study yields very negative results on the extent or quality of manpower forecasting. Most firms

do not tend to forecast seriously, even though they claim that poor forecasts would harm their operations. Further, the forecasting does not appear closely related to training programs which they undertake" (17).

Another report (18), indicated that similar weaknesses in employer data were prevalent in Newark, New Jersey. Here it was stated that "the usefulness of the survey as a means of predicting manpower need was drastically reduced by the failure of many firms, including many large ones, to supply considered responses to the requests for forecasts of job openings in the listed occupations."

A very recent study, made in 1980 by a New York-based human resources communications and consulting firm, indicates that little has changed in the past twenty years. They found that "the human resources picture in the U.S. is characterized by high unemployment, alternating gluts and shortages of trained workers and an ironic combination of extensive layoffs and urgent recruiting for specialized skills and talents. Part of this problem stems from the limited and short-range manpower planning practices of American industry." The survey, made by Deutsch, Shea & Evans, a subsidiary of Foote, Cone and Belding, found that only 4% of the 334 corporations they interviewed plan their manpower needs more than five years ahead, while 42 percent plan for only a year or less. The report concludes that rapid changes, particularly in technology, make human resources pla..ing difficult. But at the same time, these changes create tremendous needs which are not being met . . . "this lack of planning contributes to an enormous waste of talent due to job mismatch, declining productivity, and lack of critical skills." The report calls for more and better long-term planning particularly if it can be integrated with the curriculum of the schools. It also notes that one-third of the respondents had little or no faith in their forecasts, and another 58 percent called them "reasonably" accurate. The implications of these findings to area skill surveys are fairly straight forward in that they highlight the inability of employers to make long term planning forecasts. If employers are unable (or unwilling) to plan for their own general needs in the

long run, it is unrealistic to expect employers to forecast their employment needs by occupation for 3 to 5 years in the future at the request of some government agency or for non-proprietary purposes.

2. The Quality of the Methodology.

In retrospect, it is somewhat amazing that so many States managed to produce and publish reasonably good looking Area Skill Surveys first without instructions and later with them. Dr. Moser, in her evaluation of Skill Surveys, discovered that 150 surveys had been made at the time she undertook her dissertation--but little or no evaluation of them existed in the literature. It is difficult now to find more than a dozen or so of the published reports. Dr. Moser personally examined about 80 of the Surveys existing when she was compiling her data, and found that of the ones listed in government publications as available at least nine were never published, and in a number of cases, publications listed as Area Skill Surveys did not contain occupational projections, but were inventories or censuses of local manpower recources.

Except for Dr. Moser's effort, no other examination was found of the methodology finally produced by the Bureau of Employment Security in 1965. Reappraisal of the instructions shows they were directed at a narrow spectrum of the implementing analysts' capabilities. Obviously, the manual writers did not expect a high degree of sophistication or scientific research ability. The needs for and uses of the resulting data were spelled out in a series of plausible and laudable, if simplistic, declarations. The instructions emphasized the pre-survey activities, which primarily meant the setting up or latching on to a sponsoring community group which was to advise and support.

Experience shows these advisory boards sometimes proved to be complacent if not totally passive appendages rather than effective or even supportive agents. In some cases, when they were active participants, their suggestions or demands led to overly long, complicated, and implausible questionnaires which tried to include all possible items.

The need for setting specific geographic boundaries and scope and coverage of the survey was stated, if not too explicit.

General suggestions were made as to the format of the instrument to be used in collecting information; pros and cons for using "open-end" schedules against pre-listing of occupations were given, but without conviction as to which might be best. Prior decisions were recommended for determining "shortage" and "demand" occupations, using an analysis of the local office (of the State Employment Security Agency) openings and worker applications--both questionable sources for the purpose. The idea that the surveys should be used as research tools to amass empirical data leading to conclusions concerning the demand/supply condition seemed not to have been considered.

Information to be collected from employers included current total employment; requirements two and four years hence for both total and by specific occupation, and for replacements for the next 12 months; along with the number of workers expected to complete company training or to be promoted in the next two to five years. Additional information items which "might be collected" included--change in sales volume, product development, modernization, or technological change; plant expansion or contraction planned during the forecast period; changes in types of occupations caused by changes in production processes, or any factor which would effect a change in the proportions of occupations.

If employers did not respond, or only provided partial data, the activities were filled in by using other data available, e.g. figures from local office records, unemployment insurance reports, etc. It was assumed that if employers did not provide a forecast, the employment level would remain stationary. The weaknesses of this procedure were pointed out in the Moser study and also in the OTIS evaluation. Doctor Moser noted especially that it was not possible to determine when the "no-change" projection was conjecture on the part of the Employment Service. She also tested the efficacy of the "no-change" projections and found them to be worse than the Area Skill Model or a naive

model using a constant growth rate for each occupation.

3. The Quality of the Sampling Procedure.

The 1965 instructions called for use of a representative sample stratified by size of establishment. Since the entire process was largely dependent on pre-selection of occupations, the implication was strong that the coverage could be only of those industries hiring in the selected occupations. This procedure obviously would not allow for complete coverage of all employment and all occupations. In fact, at this point, the methodology tended more towards production of Training Needs Survey results than of an Area Skills Survey, the major difference being the longer forecast period.

As noted in the paper on Forecasting Labor Demand from Employer Survey Data (19), the sample survey method necessarily restricted the universe of occupations to those found in wage and salary employment. In most projects, agricultural employment was excluded, and because of the difficulty in obtaining any, let alone valid, data, the construction industry and its job trends were also often omitted. This study also stated that while "guidelines for the conduct of these surveys have been developed by the U.S. Department of Labor's Bureau of Employment Security; considerable initiative has been left to the States . . . in California, where several such surveys have been made, substantial innovations in sampling, data gathering, and analysis have been made."

It is interesting to note in this context that the Goldstein paper on occupational projections for labor market areas states that "the Area Skill Survey Program was plagued by a lack of consistency and of uniform procedures from area to area, even though there were general guidelines issued by DOL" (20). Dr. Goldstein goes on to say that such conditions would "not allow meaningful area comparisons and may lose validity and acceptance because of any non-standard procedures." He later notes "employer surveys often are used for reasons peculiar to individual states or areas and are designed to meet rather specific information needs. Thus, they tend to lack consistency and uniformity

across areas."

The sample used for the Area Skill Survey was usually selected from a listing of employing establishments reporting to the Employment Security Agency in compliance with the Unemployment Insurance Code. Since all States did not have the same coverage, especially during the sixties, the basic source could not always provide a universal listing. The non-covered establishments, if added, had to be obtained elsewhere, and the data were not always complete and were often of questionable accuracy.

The size of the sample also depended largely on the amount of money, time and staff available to handle it. If travel was restricted either because of the distances to be covered or by lack of funds, mail procedures had to be used. These, too, were subject to cost constraints in some cases as well as reduced response rates and poorer completion of the forms.

The sample expansion methodology was somewhat naive. The inflation process included a provision for non-response, if the number and significance of the non-respondents was not too great. In one known instance, the largest firm in the area did not cooperate, but the remaining data were expanded to the universe despite the glaring lack of the occupations typical of that firm and not existing elsewhere in the area. Also glossed over in the instructions was the handling of atypical establishments where the staffing patterns were vastly different than those found in other firms in the same industry group.

The instructions also omitted any means (or even reference to) firms recently established in the area, and did not consider any which had firm plans for locating in the area. Since the data base source (the U.I. records) were always at least five months behind, it was highly possible that the sample listing was particularly weak in the more dynamic areas.

4. Quality of Staffs and Respondents.

The earliest Area Skill Surveys were often conducted by eager and enthusiastic individuals in the Research and Analysis sections of State Employment Security Agencies, whose capabilities, competencies, training, and background in the field of scientifically applied statistical research were varied. The very fact that many of the surveys were done entirely by hand with the aid of desk calculators and adding machines - rather than by computer - reflects to some extent the lack of access to more sophisticated tools by the implementers.

On the other hand, the persons assigned by the employer to fill in the forms were often lacking in the knowledge and capability needed. The "chore" was usually given to someone in the personnel department, in the case of the larger employers. In small firms, either the bookkeeper or a foreman or supervisor might get the job. Even when the employer himself filled out the schedule, there were likely to be problems of comprehension, consistency, and incomplete data.

The Manpower Administration did not provide much in the way of training or technical assistance to the State Agencies; there was also little monitoring or evaluation of the final results. What seemed of most importance was the amount of publicity obtained and/or the community reaction. The survey findings often received no known review or critique by the federal office, nor was any oversight available during the conduct of the surveys.

Because of the extreme length, density, and complexity of some of the questionnaires, it was surprising that so many employers bothered to respond. The way in which questions were asked, the amount of detail required, and the requirements for critical or philosophical essays on certain items must have been overwhelming to many of the respondents, especially in the smaller communities. Their personnel officers, employment managers, and/or telephone operators who were given the questionnaire to complete (some were 30 pages or more) were rarely prepared for such a task.

Among the assets of the Occupational Employment Statistics Program in comparison to the Area Skill Surveys is the fact that the methodology and questionnaires are

consistent and that training of local staff, along with technical assistance, is provided by the Bureau of Labor Statistics and by the Employment and Training Administration. B.L.S. has also provided the necessary computer assistance, i.e. the software programs to tabulate the data.

5. The Quality of Data Analysis.

The conclusions drawn from any set of data, no matter how skilled or knowledgeable the analyst, are only as good as the data permit. Review of the critical analyses of survey methods, estimating capabilities of both respondents and response compilers, and general lack of system, organization, and uniformity of concept, language, and/or definitions, leads to the belief that many, if not all, of the surveys done in the sixties provided not much more than indications of trend at a broad level of occupational categorization. Even these indicators, except in the smaller, highly stable areas, were as likely to be wrong as right.

Because of the paucity of follow-up or validation, this analysis must of necessity be based on the few extant studies made, and on opinions and memory rather than empirical data.

It is doubtful if many of the analysts, or the employer respondents, for that matter, paid much attention to the requisite of basic economic assumptions which accompanied the questionnaires. In most cases, these assumptions were copied from the national guidelines, and may have had little relationship to factors affecting the local economy. Therefore, one may be reasonably sure that the analysts did not often connect the figures resulting from the survey with the assumptions. And when respondents did follow the assumptions, it was sometimes in direct opposition to what they knew was to happen.

In fact, the procedures set forth in the instructions demanded little more than a restatement of the numbers tabulated and summarized. In the section called, "Findings," a "careful analysis of the data obtained in the survey" is called for, but this becomes no

more than a re-listing of the data and some attempt at presenting the expected match or mismatch of supply and demand figures. The suggestion for an assessment of the adequacy of training needs is so surrounded by restrictions and cautions that any analysis would be rendered practically meaningless.

Since fewer than half the Area Skill Surveys presented adequate information on labor supply, only those which did could provide any training requirement analysis that made sense. The remainder could speak only to the possible changes in volume and trend in total occupational employment, or for broad groups, and sometimes for a limited number of specific occupations.

"If a survey does not attempt to measure the supply of labor to an occupation, one cannot determine what are shortages or surplus occupations, and thus an overall view of occupational training needs is not given" (21).

6. The Quality of Service Provided and Needs Met.

A number of factors must be considered in determining whether the Area Skill Surveys met or were able to meet the purposes for which they were devised and constructed.

The first, and probably the most important, was the credibility given them along with acceptance and application of the data by the users and for the uses for which they were meant.

One problem, never quite faced up to by either the instruction writers or the survey compilers and preparers, was (and is) that the concept of occupational structure is rarely understood and the total matrix presentation is difficult to comprehend and apply. The Area Skill Surveys, when constructed on an employment universe basis, provided too much information on a scale that awed or turned off the potential user. The technical aspects of a total matrix appeal to very few; the manpower training program perpetrators and the vocational school planners and the occupational counselors are not involved nor

interested in the "big picture." They believe they need very specific occupational information; the skill surveys and even the industry-occupational matrices developed and produced as part of the OES program do not give them that specificity.

Again, specificity was, and is, wanted in the geographic boundaries used. The school administrators and their staff members want data only for their school district area; the CETA planners demand information on labor needs confined to the walls of their prime sponsor jurisdictions; employers want to know what is going on in the merchandising or service area where they do business. The fact that none of these is usually conterminous with any "official" data base (e.g. state, county, SMSA) is not accepted as relevant.

Although it is now incumbent on employers (of 40 or more workers) to prepare and maintain staffing patterns to show employment within occupational groups by race, ethnic group, sex, and age for compliance with the Fair Employment Practices regulations, many are still unable to identify employment by individual occupations. Also, few employers are apt even now to use the same occupational titles or definitions as are used in current statistical surveys of occupations. In the days before the FEPC reports, there was still less comparability and fewer reconciliable data. Lack of cooperation in responding to questionnaires was often caused by lack of capability to do so. While some employers expressed interest in the findings of the surveys and some currently are apparently very interested in computerized economic model output, during the time when most of the surveys were done it was evident that the respondents often acted to maintain a positive public image, rather than from faith in the survey and expected use of its outcome. In at least one instance, the employing community and city/county administrators attempted to stop publication of the report because the forecasts did not show impressive gains and, therefore, might adversely affect economic development in the area.

The Wellemeyer study (22) noted that "employers for the most part had no comments on the usefulness of the survey. Most had not seen the survey and it was not

put to use for specific purposes by the company." The Moser study discovered much the same conditions among the employers in Virginia--"of the seven or eight employers interviewed intensively, only one was familiar with the Area Skill Survey, and none had used its findings (23)."

The targetted major users of any occupational projections for needs assessments were (and are) vocational education and manpower training program planners. The problems of lack of geographic and occupational specificity have already been remarked. An even greater problem was the lack of credibility in the figures on the part of these users. Dr. Moser "noted in discussions with educators that they doubted the accuracy of the Area Skill Survey data as collected by the Employment Service" (24). Her conclusion was based on personal interviews conducted with educators in Virginia, Florida and California.

Comparable and even more critical reactions from Wisconsin educators were reported in "Project Vision" (25). Here, the researchers found that employers were reluctant to make long-range forecasts, and vocational educators were not only reluctant to use them, but found good reasons for not doing so." . . .these decision makers . . . are more concerned with supporting evidence on current skill needs and continuance of those needs for at least two years with some assurance that such a trend will continue" --and further "they give little credence to the idea of identifying skill needs in the far future that are not evident today." From this it appears that the educators were more interested in maintaining and justifying the status quo than in searching out, planning for, and implementing training for jobs which might not exist at the predicted date.

"It is the judgement of Project Vision that educators at local levels would like labor market data that lead directly to a final answer to the question: 'How many graduates can be placed next June?'"

From this evidence it appeared that both CETA and vocational educators wanted a commitment to hire, while the Skill Survey data lacked this personal single-minded type

of information. Known job openings, therefore, carried far more weight and respect than any technical report or statistical tables could possibly invoke. The Wisconsin report also stated that the employment service reports did not build a credible case in a readable information package and that the reports "were simply not geared to the use of local vocational educators."

In contrast to the foregoing conclusions as to educator and manpower planner requirements, Dr. Margaret Thal-Larsen stated in her study of the San Francisco Area (26) that "effective vocational counseling requires information on trends and the number of job opportunities over the next half decade and longer. This information, usually for a five-year period and more precisely quantified, is also needed by educational authorities concerned with planning new facilities, staff acquisition, curriculum development and the like."

This attitude, not elsewhere noted, may have been founded more on an idealistic vision of what should be the users' needs rather than the more pragmatic and realistic concepts depicted by other researchers.

The most negative critique was made by Lee Hansen who, in a paper prepared in 1963 entitled, "Labor Force and Occupational Projections," questioned if it might be better if no projections were made at all. This paper, presented before the Industrial Relations Research Association, observed that since little is known of the accuracy of occupational projections at any level, they might actually do more harm than good. Hanson's criticisms were primarily based on qualitative judgements of the lack of precision surrounding manpower projections.

Questioning of Research and Analysis Chiefs who were working in the years before the OES program was installed, brought varied answers about the actual and practical uses of their own Skill Surveys. Many of the Chiefs had themselves conducted or participated in the Surveys. In a few cases it was felt that some changes were incorporated in vocational education training programs, which were at least concurrent with or shortly

followed the publication of the surveys. The incidences of incorporation and implementation of the survey findings into action by schools seemed to correlate with the dynamics of the education program in the specified area. In those areas where new schools were being built or sought, or where vocational training courses were being installed, the Surveys met with more positive response. Often the data were used to justify the buying of equipment, enlargement of facilities, and hiring of instructional staff.

Several of the persons interviewed, however, admitted that the reports were "gathering dust" from the first day of publication.

7. Qualities of Instruments Used and Range of Contents.

The instrument or questionnaires suggested in the Area Skill Survey Manual instructions consisted of two parts. The first was a schedule of several pages, depending on the number of occupations listed. This asked for current employment, expected employment, replacement needs, and the number of workers expected to complete company training programs or to be promoted into the occupation. Most often the forecasts were asked for two and five year periods.

Instructions for filling in the columns were sketchy; the procedures for determining replacement needs could not have been followed easily nor would following them have provided useful if not alone accurate data. The information requested on promotion actions was probably nowhere available.

The "basic economic assumptions" indicated were specious and, in fact, were in some points counter-effective to the objectives of the surveys. For example, it could be inferred from the one recommended objective: "Qualified workers will be available to meet any anticipated employment needs" that job vacancies could be filled with no additional or special training efforts.

The occupational listings were restricted by space, staffing, pattern knowledge, and sometimes common-sense. It was soon discovered, however, that whether "unlisted," "open-end" or "pre-selected," there were certain to be problems in employer response.

Always to be found were the "Girl Fridays," the "miscellaneous labor," and the "assistants"--all undecipherable and unclassifiable.

The second part of the schedule was even more subject to problems with response. Here, employers were expected to discuss (in narrative) the impact expected on specific occupations from important technological (or scientific) trends, new orders, new products, etc.

Employers were also asked to list occupations "for which your experience indicates training is most needed to provide better qualified workers," with the training to be provided either within the plant or by vocational or other schools.

This was supposed to be an effective means of determining and selecting occupations for vocational or manpower training, and such expectations have continued up to the present time. Those employers perceptive enough to recognize that training was needed were already providing it, either themselves or by bringing pressure on local schools and unions to include such preparation in their programs. However, it was more common for employers to speak in more general terms about the need for the family and school to indoctrinate students and other potential workers with a strong and abiding sense of the work ethic.

It has already been noted that employers were reluctant, or objected, or refused to complete the long cumbersome, and often incomprehensible questionnaires. In a number of cases, the respondents filled in the "current" information to the best of their abilities, but left blank the "anticipated" or "expected" columns. In such instances, the compilers of the data would extend the current figures into the future on the sometimes false assumption that no change was expected.

The compilation of the data, even when the survey instrument was duly and necessarily modified, was difficult. Where computer capability was available, the reporting form had to be revised and designed for keypunching. The narrative material, when provided, was rarely in a form that lent itself to compilation or analysis.

8. Other Problems.

A major difficulty and weakness often alluded to in the survey evaluations was the lack of follow-up and updating. While some states were able to update their surveys on a fairly regular basis over a period of years, most agencies found the cost of resurveying prohibitive. The range of actual costs of the reports prepared during the sixties and early seventies using the employer survey method cannot be accurately or even closely calculated. Very few records remain which can be used to determine how much was spent either by the Employment Security Agency or by the respondents. In fact, no data were found to indicate that employer costs in money were seriously considered. However, it is known that completion of the questionnaires was an expensive procedure--one large firm in San Diego, California, estimated it cost them over $5,000 to compile the data and prepare the forms. And that was in 1960.

Most of the evaluative studies did note that many employers complained about the costs of completing the questionnaires and survey forms.

Dr. Goldstein (27) noted that there was considerable difference in costs between personal interviews and mail questionnaires with telephone follow-up. The OTIS report notes that in Oklahoma in the cost of field collection was approximately $6 per employer; in Kentucky the collection cost for roughly the same information was $28 per employer (28), in 1973.

While most of the researchers did not mention the cost of the program, they did note the lack of updating, validation of findings, and reappraisal of the labor market needs. Usually, the reason for not performing these obviously necessary actions was lack of money. The State Agency would receive a grant or obtain funds or "in-kind" assistance for conducting the first survey, but resources would dry up after the report was published.

One reason for the decline in interest and availability of funding was the long time lag between the excitement and enthusiasm generated at the beginning of the original

operation and the appearance of the final, sometimes bedraggled product. Usually the time span was a minimum of six months; in many cases it was more than a year from the time the program was announced until the report appeared.

The lag between the start of the project and the dissemination of the published report was not the only time problem. Another, which was noted in some of the surveys as causing poor response by employers was the timing of, as well as the amount of time required to comply with the requests. Conclusions drawn in Project Vision (29) emphasized the point that non-response was often due to time required, difficulty in providing certain data, and "the inability to see the relevance of the survey results." The researcher's findings were that the "task of making occupational projections is an extremely difficult and time-consuming venture and that most personnel managers . . . have neither the time nor the expertise to tackle such a job (30)."

The actual timing of the survey could be of major importance in the facilitating of response. Again using the San Diego experience as an example, the survey data collection began at the same time as industry-wide labor negotiations in the aircraft plants got underway. For nearly three months it was impossible to even discuss the questionnaire completion with management. Following settlement of the labor dispute, some of the firms' personnel managers were in no mood to estimate worker needs.

Few of the largest firms maintained personnel records in a form from which the requested data could be easily extracted. If the local site happened to be a branch of a much larger conglomerate, it was sometimes necessary to make special one-time counts of employment in the survey area. Very often, employment rolls included off-site workers who were being maintained on the local payroll. This, of course, meant their culling in order to permit a more accurate count of area employment. Data needed for replacements were rarely available in any form.

The timing problem became even more important as the volume of government reports increased. One report request "bumped" up against another, both asking for

essentially the same data, but in a format so different as to require a complete effort each time.

This kind of overlap, of course, not only involved a great deal more time and personnel costs on the part of employers, but led to irritation and reluctance or refusal to comply with any except legally required actions. Duplication of effort did not always lead to compatible or comparable output, however. Often the data in one report varied widely from that shown in another, although ostensibly they were for the same topics and the same time periods.

9. The Quality of the Reports and the Analysis

In a paper presented before the International Manpower Institute in 1966, Vladimir Chavrid, then Director of the Office of Manpower Analysis and Utilization, U.S.E.S., quoted Dr. E. Wright Bakke in support of his own strong belief in the efficacy of the skill survey concept and program. Dr. Bakke's statement was to the effect that "even with their short comings, the Area Skill Surveys remain the primary source of information on anticipated demand and supply for specific occupations in specific labor market areas" (31).

Not only were the reports a primary source of information on the occupational structure of a particular labor market area, they were apt to be the sole source of data. In spite of the time lags, the data were far more current than the decennial censuses, usually more comprehensible in tabular format and offered some narrative analysis.

When Dr. Moser examined 80 surveys during the course of her research, she noted wide diversity in format and content. They varied from as few as ten pages to 150, with most having around 50 pages of tables and narrative. In some cases, a statistical supplement was provided, both to offer the user more detailed information and to keep the basic document more readable and more to the layman's taste. A number were in two and three color printing, some with attractive pictures, graphs, and illustrations.

Not too many offered much in the way of supply information; what was available usually was a count of the active registration files from the Employment Security Agency. Sometimes these figures were augmented by estimates of vocational training enrollments or completions.

Specific information was presented on from 50 to 150 occupations; the surveys from the larger areas usually had the longest lists. Replacement estimates were occasionally based on rates derived from tables of working life for men and women, when and if employers were able and willing to provide age and sex data on their workers. More often, the data on replacements were guesses using either those made by the employer or by computations based on past experience. And in many instances, it appeared that employers were providing data on turnover rather than replacements. This resulted sometimes in very large and inaccurate numbers on the demand side.

For the most part, the Area Skill Survey data were well presented and good-looking publications. The Employment Security Agencies in many states have not always had adequate funds to produce attractive publications; the surveys were obviously special efforts.

The contents of the reports were as good as the respondents and analysts could make them. The surveys generally show a relatively high level of professionalism both in the processing of the data and in their analysis. While the raw data may have been less than wished for, the handling of them was done with care and integrity.

CONCLUSIONS-RECOMMENDATIONS

It is not possible to synthesize all aspects of the Area Skill Surveys--the methodology, contents, application, value, etcetera; but it is possible to evaluate other researchers' and technicians' interpretations of these factors. The lapse of time since the

last of the reports was published, and the lack of evidence about their acceptance or use makes it necessary to depend heavily on the existing official evaluations. It has also been possible to obtain some verbal assessments from individuals "who were there," though these cannot be ascribed or directly quoted. There is also considerable personal knowledge of the surveys, their development and processing, and the results obtained.

One way of assessing the value of the overall program of Area Skill Surveys is to consider their purpose and objectives and determine how well they were met.

Major objectives of the Area Skill Survey as spelled out by the Manual instructions and often repeated in the various surveys were:

1. To supply information about job opportunities in the area for use in employment counseling.

2. To provide a tool for local office (State employment security field office) use in job development activities.

3. To augment information about local manpower resources for use in community employment development.

4. To promote training courses in local schools and apprentice training, geared to the occupational labor requirements of the area.

5. To stimulate local employers to evaluate their manpower needs and promote necessary in-plant training.

More succinctly, a paper on employer surveys presented at the American Statistical Association in 1966 stated, "The major objectives of these surveys are the development and dissemination of information on patterns of demand--both current and future--for trained workers for use in effective long-range economic planning, skill training and retraining programs at high school and post-high school levels, recruitment of workers, and counseling, both vocational and career (32)."

The goal, of course, to which these objectives were directed, was the response to and meeting of needs of users of occupational information--the planners and administra-

tors of manpower and training programs; the labor market intermediaries, including counsellors, teachers, job placement interviewers and job developers; and the direct labor market participants--the student, counsellee and job seeker.

The perceived needs for information on future labor market conditions related specifically to labor demand and supply were varied by their users and uses.

Legislative mandates began with the Wagner Peyser Act in 1933 which, in effect, called for the collection of data on job applicants and job openings. The Manpower Development and Training Act of 1962 required official documentation of a reasonable determination of the existing and expected job market prior to setting up training programs for the disadvantaged. The Vocational Education Act, passed in the same year, required that "due consideration will be given to . . . evaluations of state and local vocational education programs and services in light of information regarding current and projected manpower needs and job opportunities." To move to a more current period, Title VII of the CETA amendments of 1978 calls for the design and development of a Private Industry Council plan which requires the analysis of private sector job opportunities, including "projections of short and long-range labor needs."

These legal mandates were translated into "needs" by manpower planners and vocational educators. In order to meet the pre-determined "needs," the users looked for a means of obtaining the necessary data. The Area Skill Surveys purported to fulfill the user needs both in relation to the aforementioned objectives, as well as to fill in the open cells on required reports.

The effectiveness of the Surveys can be measured in terms of each objective as determined by the findings of the prior research papers on the subject, tempered by consensus assessments of those conclusions.

The variations of data "needs" probably present the essence of the problems involved in the evaluation of the benefits and weaknesses of the Surveys. A large number of "needs" assessments have been made, some directed to CETA administration and staff;

some to vocational educators, planners and counsellors; but very few to the ultimate consumer--the direct labor market participant.

The consensus, derived from such inquiries and their responses, has usually been that the policy makers and planners believe they need (or want) long-range information. The labor market intermediaries are more positive--they want and can put to use short-term information on existing or about-to-exist job vacancies. Actual numbers apparently are of little importance; the major question is: "are there vacant and accessible jobs in some specific occupations available to our clients and will those jobs be there when training is completed?" Since not much effort has been given to investigate the interests of the labor market participant, the unemployed person, or the job-hunting student, it can only be assumed that they also want information on immediate job openings rather than on long-term potential.

The Area Skill Survey, of course, did not provide job vacancy information, nor was it intended to do so. However, it would have been possible to derive very useful job search information from the current occupational structure of the area as shown in most of the Surveys. The data on occupation by industry did provide a very major portion of total labor demand in the area, and in effect responded to the first of the objectives--to supply information about job opportunities. The present OES program continues to obtain such data from employers which is provided to users in a consistent format.

The trouble was, and continues to be, that few, if any, of the potential users recognized the value of the occupational patterns, nor did they understand how to put that information to use in program planning, counselling, or job search.

The two- and five-year forecasts should have met at least the reporting requirements of the policy makers and administrators. The occupational trend information provided in most of the reports, if reasonably accurate, could have been used to set up and implement training and instructional courses leading to the qualifying of acceptable recruits for the expected jobs. The longer term figures on potential worker demand

should have been useful to "career" counsellors, who were supposed to help bring to the attention of students the more fertile fields where jobs would be waiting at the end of the education and preparation period.

The figures of future occupational needs did provide data aimed at fulfilling objective 4--to promote training courses in local schools and apprentice training, geared to requirements in the area. Even when the trend predictions were accepted by them, the education agencies often reacted negatively to the data because of the frequent lack of detail. Most of the surveys limited the number of occupations rather severely, or tended to group occupations into very broad categories. The manpower planners and the education decision makers were attempting to justify fairly specific training programs aimed at preparing their enrollees for fairly specific jobs.

Communication between employers and the collector and user agencies was beneficial more often than not. While some employers showed "a distinct antipathy toward government in general or toward any type of questionnaire or report form," some state agencies reported phenomenal success--over 95 percent response rates. It must be noted here that other states showed response rates under 30 percent. In at least two of the evaluation reports, the researcher discovered a number of employers who had no recollection of the questionnaires, of responding to them, or even of the survey project, although their original responses were on record.

It is felt, therefore, that there was an immediate "pay off" in some instances in bringing the employing community into closer (and friendlier) contact with the training agencies. However, there is no evidence available to suggest that the data were used in any way for "community employment development" (objective 3), or to get employers "to evaluate their manpower needs or set up additional in-plant training" (objective 5). In fact, current investigation indicates that employers still do not plan their manpower resources, and apparently have little interest in such planning except for the "upper echelons" of the work force--occupational levels which rarely, if ever, lend themselves to manpower or vocational education programs.

In regard to objective 2--the use and application of the occupational data by local employment security offices--the conclusion must be drawn that the survey reports and data had little or no effect in job development nor were they known and used by local office counselors. In fact, it was not unusual if the local office personnel was not even aware of the existence of the surveys, except in those few instances where local office staff were used as project staff.

A major weakness of the Area Manpower Surveys was that while the process of obtaining current and expected employment data was considered explicit and direct, the responses were likely to be guesses and opinions. Intensive reviews of the procedure and the results strongly agree with this point of view. The data provided were largely intuitive rather than empirical. Rarely did the respondents consider such important factors and variables as expected product mix, technological changes, labor or material costs, consumer interests, or even basic economic/political conditions.

Labor productivity and/or availability did not enter into the figures; the basic economic assumptions, as previously mentioned, presupposed that an adequate labor supply would be ready as needed.

The forecasts made by the employers, even when modified or manipulated by the project staff, were never related to wage and price variables, quantity or quality of output, or any of the other economic factors which do affect labor demand. Rather, the predictions were usually made on the assumption that past trends would continue, or were judgemental without basis for the judgement.

Therefore, even in those areas where the contents of the Area Manpower Surveys seemed to meet stated objectives, the credibility and validity of the data were such that the reports were largely impotent as bases for planning or decision making. It is obvious from the evaluation papers that not even trend was accurate frequently enough to be truly useful. In the instances where the researcher reported, "good fit" with actual occurrence, it could usually be attributed to a moribund state of the local economy--respondents did

not expect anything to happen and nothing did, at least, not on the summary level. Small, and sometimes not so small, internal changes were often miscalled, but tended to cancel each other out, especially in a non-dynamic area.

The lack of detail relating to occupations and the probable inaccuracy of occupational distribution was caused in large part by limitations of staff and other resources. But, it was also due to the gross variations of classification systems used by employers. Occupational titles had to be translated into a common taxonomy--a task often beyond the capabilities of any of the survey participants. It was sometimes impossible to even determine the correct major occupational category as assigned tasks and responsibilities of workers in many firms crossed accepted definition boundaries. Therefore, the resulting data might lack consistency and would be of little relevance.

The concept that "micro" manpower planning and forecasting should be more accurate and effective because it is directly generated by the individual firm within the private employing sector sounds better than it works. As stated in the monograph on Employer Manpower Planning and Forecasting and in the most recent study on the subject (33), such planning and forecasting is mostly limited, short-range, segmental, and apt to be haphazard and disjointed. Data derived thereof would not be a good basis for summation into an area-wide structure. While data obtained from certain individual firms may have been good and useful, their incorporation with less accurate information would mean their dilution. It was a requirement of the survey procedures that individual firm data were not divulged or shown in any way to breech confidentiality; therefore, any "good" data, if recognized, could not be released or used for job search or counselling purposes. This requirement did not necessarily pertain to the "Training Needs Surveys" in which employers were usually made aware that the figures they provided might be used for job or training slots. With the Area Skill Surveys, the information was asked for under the promise of complete confidentiality.

Other information needs which the Area Skill Surveys did not address included shift differentials, working conditions, or the psychological/sociological aspects of the jobs currently and expected to be available.

As a final word, a comment has been gleaned from the Thal-Larsen report wherein it is stated "Area Skill Surveys are substantially superior to the training needs survey in structure. That is, the data . . . can be specified, whereas the training needs survey data, characterized as bits and pieces, is unstructured. . . The greater comprehensiveness of (the Area Skill Survey) would make it a far better choice if it were not for its high cost, both public and private. One additional negative factor is . . . they quickly lose their timeliness . . . and the output often escapes the evaluation it should receive, and so can lack reliability and prove embarrassing to the responsible agency" (34).

RECOMMENDATIONS

The National Commission on Employment and Unemployment completed its assignments to review the technical aspects of labor market information and statistical programs in 1979. In its findings was a report prepared by Harold Goldstein which stated that "Data on employment conditions and job prospects by occupation are crucial for wise investment of the billions of dollars spent each year on specialized occupational education and training programs by federal, state, and local governments, by employers, and by trainees and their families."

A recommendation of the Commission, later adopted in toto by the National Governors' Association, was that "all occupational projections for the nation, states, and areas should be systematically reviewed by the responsible agencies (BLS for techniques, ETA-LMI for findings) to analyze forecast errors and improve future projections."

In effect, two high-powered and eclectic bodies have decided that the occupational forecasting business is too important, too complex, too difficult, and perhaps too dangerous to put in the hands of amateurs, no matter how well-intentioned.

To paraphrase Richard Dempsey (35), whether the data are needed for judicious planning or because of legislated reporting requirements, they are a necessary and integral part of any manpower and vocational education planning system. Decisions are being made which involve, either implicitly or explicitly, use of occupational projections. In the past, as has been proved in the case of the Area Skill Surveys, the projections provided to planners and other users were very often the intuitive judgement of individuals. The conceptual basis of the surveys was itself questionable--that employers were good forecasters of their own worker needs. Researchers discovered that employer forecasts of employment change often showed little improvement over naive no-change predictions.

Therefore, it can be recommended that employer surveys should not be used to obtain forecasts, predictions, or projections of individual occupations into time.

Where the occupational data base is inadequate for conscientious and intelligent planning, the information gaps should be carefully considered, and efforts and resources should be directed toward bridging those gaps.

The Area Skill Survey guidelines called for assessment of occupational supply as related to demand; however, the efforts made to obtain such data were generally ineffective. The OES program does not involve the measurement of occupational supply; and neither method provides information on the characteristics of available or potential worker supply.

Except for the data made available by the decennial census--and those are based on self-assessment and highly subject to error as well as limited to a comparatively few occupations--very little is known about the traits, skill levels, abilities, or even number of the occupational supply.

"The close association between educational achievement and employment opportunity is widely recognized--the higher an individual's educational attainment, the more likely he or she is to be in the labor force, to avoid unemployment, to hold a better job,

and to attain higher lifetime earnings . . . For policy analyses, it would be useful to know what skills our working age population has acquired in order to assess the likelihood of nonparticipants entering the labor market, or the job expectations of unemployed persons" (36).

Other possibilities for research and investigation include some designated in the publication (37) prepared by North Texas State University. This monograph recommends that certain types of employer surveys might be used to supplement existing labor market information to obtain information on:

1. Nature and structure of internal labor markets of firms;
2. Hiring practices and policies of local firms;
3. Number and occupational characteristics of existing job vacancies in local labor markets;
4. Wage information;
5. Training and promotional policies;
6. Employer attitudes toward CETA programs.

Some of these recommendations are similar to earlier efforts in the field. Vacancy surveys were tried in the past without too much success; there is no reason to believe they would be much more effective now. Wage surveys are very difficult and complicated and require highly proficient technicians to accomplish; besides, a great deal of wage information is already available. However, these caveats should not prevent local efforts in some of the other areas, and especially not in projects directed toward collecting, compiling, and analyzing data on labor supply.

In accord with the recommendations of the National Governors' Association, it is suggested that, "In order to avoid unnecessary duplication of Labor Market Information efforts, the SESA-LMI units and the SOICCS should be consulted prior to the funding of labor market information activities outside of these agencies" (38). And to reiterate a recommendation from the same source—all occupational projections should be systemati-

cally reviewed by the responsible agencies for coverage, sample adequacy and forecast errors. This, of course, implies that the whole skills survey program should be subject to mentoring and oversight by knowledgeable technicians, before, during, and after. Even so, the data obtained directly from employers may be suspect.

Other subjects for possible investigation by groups needing occupational information include studies of labor mobility. These would cover two diverse areas: one would be of commuting patterns within, into, and out of the labor market area. Employer records might prove a rich source of information on the occupational skills of people by where they work and where they live.

The other aspect of mobility of workers is occupational mobility--the capability of moving from one job to another, lattice movements within firms, and transferability of skills.

An area of investigation which needs careful attention is the coupling of instructional programs and courses to their expected occupational outcomes. Some work in this field has been done through the "crosswalks" generated to provide reconciliation between demand and supply data taxonomies.

These kinds of information, coupled with already available occupational trend patterns and data from on-going programs, would provide a useful and practical body of economic intelligence on the labor market and its demand and supply factors.

As a final recommendation, all types of employer surveys should be kept to a minimum, no matter how worthy the cause. As experienced analysts in the field put it, "There is also one other important scarce resource, and we mention it last to emphasize its importance--the patience of the public. We cannot exhaust this patience by asking too many questions which might be interesting to know, but for which no practical need is evident, or by going back too often" (39).

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PARTIAL LIST OF STATES AND AREAS FOR WHICH AREA SKILL AND TRAINING NEEDS SURVEYS WERE CONDUCTED

State and Locality	Publication Date
Alabama	1959
Alaska	1971
Arizona	
Phoenix	1956-1959
Tucson	1956
Statewide	1956
Statewide	1959
California	
San Diego	1960
Imperial County	1965
District of Columbia	
Washington, D.C.	1957
Colorado	
Denver	1958
Delaware	
Statewide	1963
Wilmington	1961
District of Columbia	1960
Florida	
Tampa--St. Petersburg	1957
Pensacola Metropolitan	1962
Okaloosa--Walton	1962
Ocala	1964
Miami	1964
Georgia	
Atlanta	1958
Statewide	1963
Hawaii	
Oahu	1958

Idaho	
Ada County	1961
Ada County	1965
Bingham County	1963
Bonner	1962
Bonneville County	1963
Canyon	1961
Canyon County	1966
Cassia County	1963
Clearwater	1962
Jerome County	1963
Kootenai County	1962
Idaho County	1962
Minidoka County	1963
Nez Perce County	1965
Pocatello Area	1963
St. Maries Area	1962
Twin Falls County	1963
Twin Falls County	1966
Illinois	
Decatur	1960
Indiana	
Indianapolis	1957
Kokomo	1959
Harrison County	1962
Statewide (Hospitals)	1963
Indianapolis	1964
Iowa	
Dubuque	1957
Dubuque	1960
Waterloo	1958
Henry County	1965
Humboldt County	1965
Maryland	
Baltimore County	1964
Metropolitan Washington	1963
Baltimore City	1964
Massachusetts	
Worcester	1962
Northern Berkshire County	1963

Minnesota	
Rochester	1960
St. Cloud	1963
Fergus Falls	1963
Minneapolis--St. Paul	1966
Michigan	
Calhoun County	1960
Monroe County	1960
Kalamazoo County	1960
Berrier County	1961
Mississippi	1963
Missouri	
St. Louis	1957
Kansas City	1957
St. Louis	1964
Montana	
Missoula County	1964
Nebraska	
Omaha	1964
New Hampshire	
Statewide	1964
New Jersey	
Paterson	1962
Jersey City	1962
Perth Amboy-New Brunswick	1963
Atlantic City	1963
Ocean City--Wildwood--Cape May	1963
Lakewood-Toma River	1963
Bridgeton--Vineland	1963
Long Branch	1964
Camden	1963
Flemington	1964
Trenton	1964
Newark	1964
New Mexico	
Albuquerque	1959
New York	
Utica--Rome--Herkimes--Little Falls	1962

North Carolina	
Statewide	1962
Statewide	1964
Statewide	1963
Ohio	
Youngstown—Warren	1961
Cleveland	1962
Clinton, Fayette, Pike and Ross Counties	1965
Oklahoma	
Shawnee	1962
Statewide	1964
Oklahoma City	1965
Tulsa	1965
Oregon	
Lane County	1962
Portland	1964
Pennsylvania	
Wilkes Barre-Hazelton	1957
York	1959
Reading	1959
Erie	1959
Philadelphia	1962
Rhode Island	1967
South Carolina	
Columbia	1962
Greenville	1963
Statewide	1963
South Dakota	
Rapid City	1961
Statewide	1963
Texas	
Dallas	1960
Corpus Christie	1961
Austin	1962
Eight County Houston—Gulf Coast	1962
Wichita Falls	1965

Tennessee

Davidson County	1962
Athens—Etowoh	1962
Gibson County	1962
Shelby County	1965
Tullohoma	1962
Livingston	1962
Greenville	1962
Dresden	1963
Clarksville	1963
Dyersburg	1963
Paris Henry County	1963
Bristol	1963
Henderson County	1963
Union City	1963
La Follette	1963
Carroll County	1964
Chattanooga	1964
Tipton County	1964
Rhea County	1964
Madison County	1964

Utah

Juat County	1959
Statewide (Technical)	1960
Ogden	1961
Salt Lake and South Davis	1962

Vermont

Statewide	1964

Virginia

Lynchburg	1960
Fredericksburg	1962
Colonial Heights, Hopewell and Petersburg	1965
Roanoke	1965

Washington

Pierce County	1962
Clark County	1965
Benton and Franklin Counties	1964
Spokane Country	1962
Wheeling—Steuberville	1958
Boone, Logan and Mingo	1960
McDowell, Raleigh and Wyoming Counties	1960
Baxton, Clay, Gilmore, Lewis, Nicholas, Upsbur and Webster Counties	1961
Barbour, Dodridge, Harrison, Marion, Monongalia, Preston, and Taylor Counties	1962

Karowho County	1962
Grant, Hampshire, Hardy, Mineral, Pendleton, Randolph and Tucker Counties	1962
Statewide	1963
Mannington	1966

Wisconsin

Milwaukee County	1958
Racine County	1957
Brown County	1960
Marathon County	1960
Manitowoc and Calumet Counties	1960
Polk County	1964
Statewide (Managerial, Professional and Semi-Professional Occupations)	1961
Statewide (Teachers)	1961
Statewide	1961
Statewide (Clerical, Sales, Service and Skilled Occupations)	1962
Statewide (Health and Related)	1963